ASC CDL / User LUT User's Guide

For BVM-E Series

Ver. 1.0

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Sony Corporation

Revision Record

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How to use ASC CDL

About ASC CDL function

The ASC CDL (American Society of Cinematographers Color Decision List) is a format for the exchange of basic color grading information. ASC CDL allows you to change color representation of the monitor during the production of content for digital cinema, television, and commercial projects.

- You can save as many ASC CDL files[1] on to a Memory Stick™[2] and store up to 5 files within the BVM-E monitor as presets. All of your creative looks can be applied from a Memory Stick™ via BKM-16R controller.
- Each of the 5 preset files can each be assigned to any of the 30 channels in the monitor. This makes it easy to compare looks between different sources.

* Please read the BVM-E Operation Manual for menu operation.

ASC CDL File Format for BVM-E monitors

BVM-E monitors are capable of loading/applying ASC CDL files in the following format. This format conforms to "XML Color Correction Collection" described in the "ASC-CDL_Release1.2" document.

File description example

```
<ColorCorrectionCollection xmlns=" ">
  <ColorCorrection id=" ">
    <SOPNode>
      <Slope>1.000 1.000 1.000</Slope>
      <Offset>0.000 0.000 0.000</Offset>
      <Power>1.000 1.000 1.000</Power>
    </SOPNode>
    <SATNode>
      <Saturation>1.000</Saturation>
    </SATNode>
  </ColorCorrection>
</ColorCorrectionCollection>
```

Range of each parameter

0	≦	R Slope	＜	4
0	≦	G Slope	＜	4
0	≦	B Slope	＜	4
-1	＜	R Offset	＜	1
-1	＜	G Offset	＜	1
-1	＜	B Offset	＜	1
0.5	≦	R Power	≦	2
0.5	≦	G Power	≦	2
0.5	≦	B Power	≦	2
0	≦	Saturation	＜	2

- Slope, Offset, Power should be described in between <SOPNode> and </SOPNode>.
- Slope should be described in between <Slope> and </Slope>.
  The three values of R Slope, G Slope, B Slope should be described in this order with a space in between.
- Offset and Power follows the same format as that of Slope.
- Saturation should be described in between <SATNode> and </SATNode>.

The Saturation value should be described with only one value in between <Saturation> and </Saturation>

ASC CDL file destination and extension.

- File directory (in the Memory Stick™): /MSSONY/MONITOR/BVM_E/ASC_CDL
- File extension: ".cdl"
- File size: Under 256kB

[1] Up to 1,000 ASC CDL files

[2] "Memory Stick PRO™ (High-Speed)" or "Memory Stick PRO Duo™ (High-Speed)" is recommended.

- Usable characters as file name: Following characters and symbols within total of 20 letters.
  (1) Alphanumeric characters: A～Z a～z 0～9
  (2) Symbol characters: !#$%&'()+-=~^`@[]{}._

NOTE

- Contrast/Brightness of the monitor is fixed to the default value (Contrast: 1000, Brightness: 000) and cannot be changed when a ASC CDL is applied.
- When parameters are missing or exceeding the range, the following error message will be displayed.
  - "Shortage / Overage of CDL": if any parameter of Slop, Offset, Power, of Saturation is missing
  - "Unacceptable CDL value": if any of the parameter exceeds the range of table above
  - “File Error”: for other errors
- It is still possible to perform auto white balance operations, however;
  - It may take more time or may error with certain ASC CDL data.
  - It may cause large changes to the color temperature when used in "ASC CDL: Not applied" mode. In this case, please perform auto adjustment again in "ASC CDL: Not applied" mode..

How to use User LUT

About User LUT function

The User LUT (Look-Up Table) is used for previewing looks on a monitor simulated with the final picture colorimetry (digital cinema, film print, etc.). A LUT created by color correction (color grading) software / hardware can be loaded/applied to the monitor and allows the change of color representation of the monitor.

- You can save as many User LUT files[3] on a Memory Stick™[4] and store up to 5 files within the BVM-E monitors as presets. All of your creative looks can be applied from the Memory Stick™ via BKM-16R controller.
- Each of the 5 preset files can each be assigned to any of the 30 channels in the monitor. This makes it easy to compare different looks.

* Please read the BVM-E Operation Manual for menu operation.

User LUT File Format for BVM-E monitors

BVM-E monitors are capable of loading/applying User LUT files in the following format.

File description example

```
#Version:
BVM-E_LUT
1.00

#Color Space:
5

#Gamma:
2

#Grid Num:
33

#Grid:
0.000000
0.002360
0.012560
    ⟩

#LUT:
0.000000
0.000000
0.000000
0.000120
0.000150
0.000180
    ⟩
```

#Version:

Fixed	BVM-E_LUT 1.00

#Color Space:
Color Space of LUT

0	Reserved
1	Reserved
2	Reserved
3	SMPTE-C
4	EBU
5	ITU-R.BT709
6	D-Cine
7	S-Gamut
8	E250/E170 Native
9	Reserved
10	Reserved

#Grid Num:
Number of lattice points

Range	8～33

#Grid: Position of lattice point

Range	0.000000 to 1.000000
No. of places	8～33
Order	Ascending

#Gamma: Gamma of LUT

0	Reserved
1	Scene-Linear
2	2.2
3	2.6
4	Reserved
5	S-LOG Full

#LUT: LUT data

Range	0.000000～1.000000
No. of places	Number of lattice point x Number of lattice point x Number of lattice point x 3
Order	Lut[R0][G0][B0].R Lut[R0][G0][B0].G Lut[R0][G0][B0].B Lut[R0][G0][B1].R Lut[R0][G0][B1].G Lut[R0][G0][B1].B ⟩ Lut[RGrid-1][GGrid-1][BGrid-1].R Lut[RGrid-1][GGrid-1][BGrid-1].G Lut[RGrid-1][GGrid-1][BGrid-1].B

[3] Up to 1,000 User LUT files

[4] "Memory Stick PRO™ (High-Speed)" or "Memory Stick PRO Duo™ (High-Speed)" is recommended.

The User LUT file consists of six portions.

 # Version: is to identify the file as a User LUT that can be read by the BVM-E monitor. Please describe in the above table with a fixed string (including line feed). The LUT will not be read other than this description.

 # Color Space: describes the color gamut which the User LUT data is limited within. Select one using the number 0 to 10 from the items in the Color Space table above. Do not select items that are “Reserved” (0,1,2, 9,or 10)as they may be used in future enhancements. This color space will be displayed in the menu when the User LUT is applied to the monitor. If the color space is different from the monitor’s configured color space, (set in Channel Configuration) a message "Wrong Color Space" will appear.

 # Gamma: describes the gamma which the User LUT data is based on. Please select using numbers of 0 to 5 in the Gamma table. For example, if the User LUT was made with a 2.2 video gamma, please select 2. Do not select items that are “Reserved” as it may be used for future enhancement.

 # Grid Num: describes the number of lattice points in the User LUT data. Please describe the number of lattice points common to each R, G, B. LUT data set as 8 to 33 lattice points. The data will not be read if the number range is other than 8 to 33.

 # Grid: describes the position of each lattice point in the User LUT data. Please use a fixed length of six digits after the decimal point. Separate each lattice value with line feed (newline) and align them in ascending order. Please make sure the total number of lattice point entries match with # Grid Num.

#LUT: describes the LUT value corresponding to the lattice point specified in the #Grid. Please use a fixed length of six digits after the decimal point. Separate each lattice point with line feed (newline) and align them in ascending order. Please refer to the LUT Data table above for the order of each description. Please make sure the total numbers of LUT data values match the number set in #Grid Num (cube of # Grid Num) × 3.

Please describe the each segment (#Version:, #Color Space:, #Gamma:, #Grid Num:, #Grid:, #LUT:) in this order, or else the monitor will not read the LUT properly. Comments are allowed to be described anywhere, but please be sure to write “#” at the line head of the comments.

User LUT file destination and extension.

- File directory (in the Memory Stick™): /MSSONY/MONITOR/BVM_E/USER_LUT
- File extension: “.lut”
- File size: Under 4MB
- Usable characters as file name: Following characters and symbols within total of 20 letters.
  - (1) Alphanumeric characters: A～Z a～z 0～9
  - (2) Symbol characters: !#$%&'()+-=~^`@[]{}._

NOTE

- Contrast/Brightness of the monitor is fixed to the default value (Contrast: 1000, Brightness: 000) and cannot be changed when a User LUT is applied.
- Parameters that are missing or exceeding the range will result in an error. Files that cannot be read (e.g. files that are broken) will also result in an error.
- It is still possible to perform auto white balance operation by internal sensor (BVM-E170) or by external probe, however;
  - It may take more time or may error with certain User LUT data.

- It may cause large changes to the color temperature when used in "User LUT: Not applied" mode. In this case, please perform auto adjustment again in "User LUT: Not applied" mode.

- 1.0 specified in # Grid: and # LUT: is compatible with light equivalent to 100% of the input signal level or 1,000% (S-LOG).

  When a User LUT is applied, the image can be clipped at the maximum input and output level specified by the User LUT.

Appendix：ASC CDL / User LUT processing order and a circuit position